

# Assignment 3

Şevval Atmaca, 21827115  
Department of Computer Engineering  
Hacettepe University  
Ankara, Turkey  
`b21827115@cs.hacettepe.edu.tr`

November 22, 2021

## 1 Introduction

For the 1st part, converting the square to a triangle with a line loop. Finally, I added the buttons and made the desired direction change, acceleration, deceleration and color change features.

For the second part, I took the emoji assignment I drew from the previous assignments and added spin, scale and spiral movement features along with the buttons.

## 2 Experiment

### 2.1 Part 1

For the 1st part, converting the `triangle_strip` to a `line_loop`. Then, I added 4 buttons.

For the first button (Toggle): When I clicked this button, I changed the direction of the shape. I changed the direction of the shape by taking the negative of the `theta`.

For the 2nd button (Speed Up): I accelerated the shape in this button. For this, I added `set time out` and `delaying time` to the animation, and every time I press the button, I cut the `delaying time` in half.

For the 3rd button (Slow Down): I slowed down the shape in this button. For this, I added `set time out` and `delaying time` to the animation and doubled the `delaying time` every time I press the button.

For the 4th button (Color): Every time I press this button, I made random colors for each corner.

## 2.2 Part 2

For the second part, I took the emoji assignment I drew from the previous assignments and added spin, scale and spiral movement features along with the buttons.

For the spin, I added a theta variable for change position of shape in vertex shader. Also, I multiplied this theta variable by the speed of the spin.

For the scale, I created a variable currentScale to change the size of the shape in vertex shader. I also adjusted the size of the shape to be 1.5 max and 0.5 min.

For the spiral, I created a mathematical formula and changed the position of the shape in the vertex shader as the shape rotates in the spiral and also I changed the speed of the shape by multiplying the speed of the spiral.

Table 1: Classes

Class Name	Attributes	Methods
initialize.js	-	loadShader, initShaderProgram
app.js	program, canvas, gl, currentScale, yellowColor, brownColor, whiteColor, startSpinning, spinSpeed, direction, startScaling, scalingUp, scalingDown, theta, startSpiral, spiralSpeed, i	main, calculateBezierCurvePosition, draw, drawShape
shaders.js	vsSource, fsSource	-

Table 2: Methods

Method Name	Input(s)	Output(s)	Info
loadShader	gl, typeOfShader, source-OfShader	shader	A new shader is created and compiled
initShaderProgram	gl, vsSource, fsSource	shaderProgram	Calling load shader method for shaders and create Program
main	-	-	main function
calculateBezierCurvePos	P0, P1, P2, t	xPos, yPos	To calculate points on bezier curves when I was drawing the emoji
draw	positions, colors	-	For create and bind buffer using vertex and colors arrays
drawShape	positionBuffer, vertex-Count, colors	-	For draw shapes and requestAnimationFrame()

### 3 Conclusion

In this assignment, unlike other assignments, I learned buttons, spiral movements. I think the most challenging part was the spiral part.

### References

-